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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/872,458	05/31/2001	Clifford N. Click	SUNMP018	3013

25920 7590 06/08/2005

MARTINE PENILLA & GENCARELLA, LLP
710 LAKEWAY DRIVE
SUITE 200
SUNNYVALE, CA 94085

EXAMINER

KENDALL, CHUCK O

ART UNIT	PAPER NUMBER
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2192

DATE MAILED: 06/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/872,458

Applicant(s)

CLICK ET AL.

Examiner

Chuck Kendall

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 January 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 27-38 is/are pending in the application.
- 4a) Of the above claim(s) 7-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 27-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/27/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to the application filed 01/27/2005
2. Claims 1 – 6, claims 7 – 26 have been cancelled and claims 27 – 38 have been added.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 recites the limitation "the discovering" in line 3. This renders the limitation vague and indefinite. Applicant's previous limitation "discovering index expression..." has already been referenced to in the preceding claim limitation where Applicant states "...index expressions discovered..". Correction is required.

Claim 1 recites the limitation "trip counter and offset" in line 7. There is insufficient antecedent basis for this limitation in the claim.

Claim 1 recites the limitation "iteration splitting" in line 8. There is insufficient antecedent basis for this limitation in the claim.

Specification

4. The use of the trademark Java has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology.

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Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

On page 1, line 11 and updated cross reference status is required for the cited reference entitled “ System and Method for Loop Unrolling in a Dynamic Compiler ”.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

6. Claims 1 – 38 are rejected under 35 U.S.C. 102(e) as being anticipated by Kawahito et al. USPN 6,519,765 B1.

Regarding claim 1, Kawahito teaches a method for loop optimization within a dynamic compiler system, comprising:

discovering each index expression within a loop portion (11:57 – 63);

determining which arrays are accessed using the index expressions discovered by the discovering (8:33 – 37, see array index (A mod N));

for each of the arrays accessed using the index expressions, sorting the index expressions by the trip counter and offset and (3:35 – 60, for sorting see execution order, also see 7:10 – 20, for index expressions and offset);

creating a loop structure wherein iteration splitting is reduced to eliminate at least one of an upper or lower range check in at least one loop of the loop structure, the

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loop structure being determined based on the sorted index expressions (2:50 – 60); wherein the creating a loop structure comprises;

creating a pre-loop structure based on an original loop structure , for indexing expressions, see routine calls; generating a main loop structure having indexing expressions based on the original loop structure, wherein the indexing expressions cannot produce an underflow and creating a post-loop structure based on the original loop structure (1:63 – 2:25), pre-loop structure is capable of testing indexing expressions for underflow and wherein the post-loop structure is capable of testing indexing expressions for overflow (2:10 – 17).

Regarding claim 2, a method as recited in claim 1, wherein the pre-loop structure includes an array boundary test (Kawahito, 12:57 – 63).

Regarding claim 3, a method as recited in claim 2, wherein the post - loop structure includes an array boundary test (for post loop structure see, dividing into three parts and upper bounds, Kawahito, 1:63 – 2:25).

Regarding claim 4, a method as recited in claim 3, wherein the main loop structure does not include an array boundary test (11:39 – 43, see limited to predefined condition).

Regarding claim 5, a method as recited in claim 1, further including the operation of compiling a computer program during execution of the computer program (10:27 – 33).

Regarding claim 6, a method as recited in claim 5, further including the operation of interpreting lines of the computer program during execution of the computer program (10:34 - 37).

Regarding claim 27, which recites similarly to claim 1, see reasoning as previously discussed above.

Regarding claim 28, the method of claim 27 wherein the program is a compiler internal representation of bytecode (10:27 – 30, see bytecode).

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Regarding claim 29, the method of claim 28 further comprising transforming the computer program into native executable code (10:30 – 31).

Regarding claim 30, the method of claim 27, wherein the loop structure comprise a pre loop based on the loop portion wherein indexing expressions are boundary tested for underflow only, a main loop based on the loop portion wherein indexing expressions are not boundary tested, and a post loop based on the loop portion wherein indexing expressions are boundary tested for overflow only (1:63 – 2:25).

Regarding claim 31, which recites similarly to claim 1, see reasoning as previously discussed above.

Regarding claim 32, which recites similarly to claim 28, see reasoning as previously discussed above.

Regarding claim 33, which recites similarly to claim 29, see reasoning as previously discussed above.

Regarding claim 34, which recites similarly to claim 30, see reasoning as previously discussed above.

Regarding claim 35, which recites similarly to claim 1, see reasoning as previously discussed above.

Regarding claim 36, which recites similarly to claim 1, see reasoning as previously discussed above.

Regarding claim 37, which recites similarly to claim 28, see reasoning as previously discussed above.

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Regarding claim 38, which recites similarly to claim 30, see reasoning as previously discussed above.

Response to Arguments

7. Applicant's arguments with respect to claims 1 – 6, & 27 - 38 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chuck Kendall whose telephone number is 571-272-3698. The examiner can normally be reached on 10:00 am - 6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Dam can be reached on 571-272-3695. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CK.

Chameli C. Das
CHAMELI C. DAS
PRIMARY EXAMINER
5/31/05